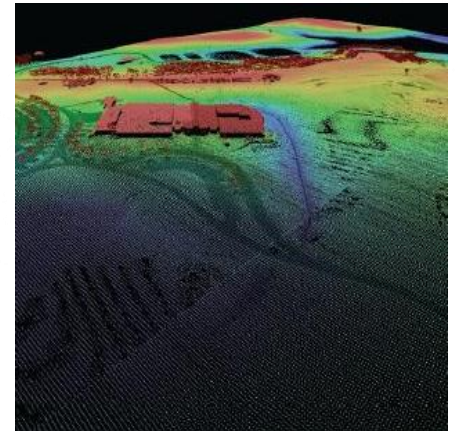
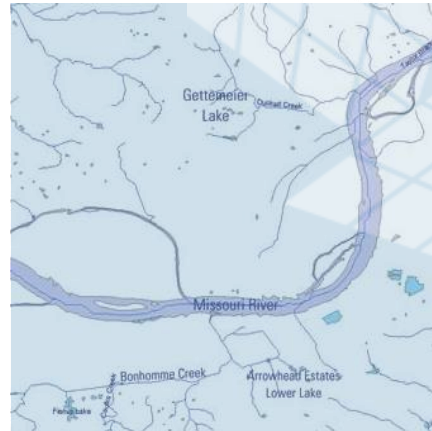
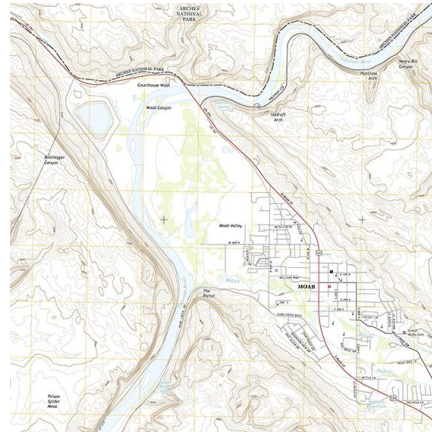




3D Elevation Program (3DEP)

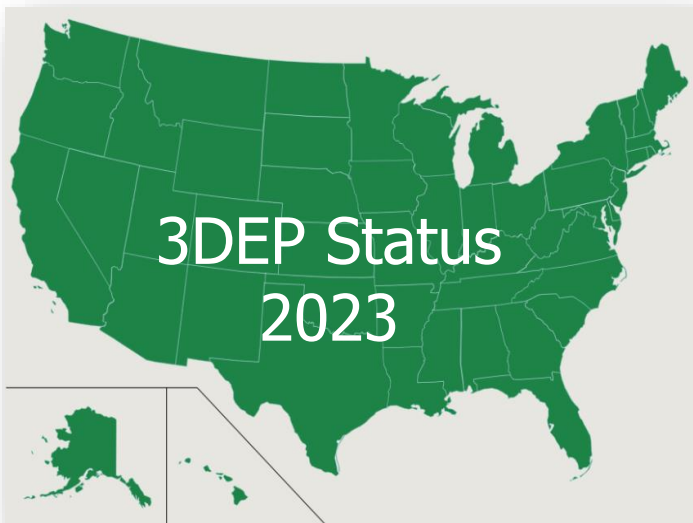


Jim Langtry
National Map Liaison – NE, IA, KS, MN, WI



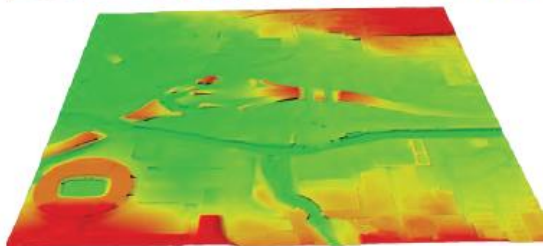
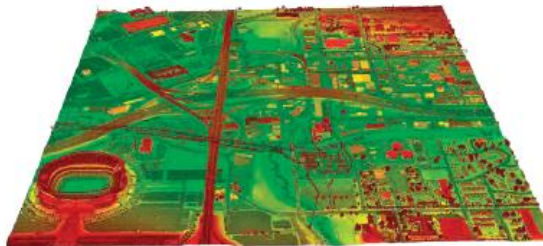
3D Elevation Program (3DEP) Goals

- Complete acquisition of nationwide lidar (IfSAR in AK) in 8 years
- Address Federal, state and other mission-critical requirements
- Realize ROI 5:1 and potential to generate \$13 billion/year
- Leverage the capability and capacity of private mapping firms
- Achieve a 25% cost efficiency gain
- Completely refresh national data holdings

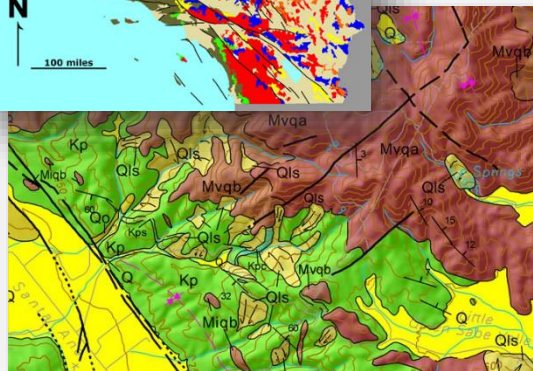
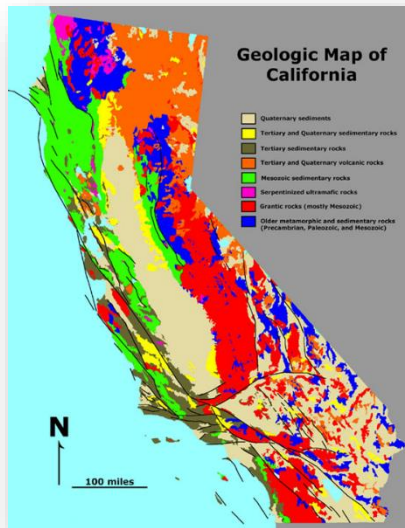


		Annual Benefits	
Rank	Business Use	Conservative	Potential
1	Flood Risk Management	\$295M	\$502M
2	Infrastructure and Construction Management	\$206M	\$942M
3	Natural Resources Conservation	\$159M	\$335M
4	Agriculture and Precision Farming	\$122M	\$2,011M
5	Water Supply and Quality	\$85M	\$156M
6	Wildfire Management, Planning and Response	\$76M	\$159M
7	Geologic Resource Assessment and Hazard Mitigation	\$52M	\$1,067M
8	Forest Resources Management	\$44M	\$62M
9	River and Stream Resource Management	\$38M	\$87M
10	Aviation Navigation and Safety	\$35M	\$56M
:			
20	Land Navigation and Safety	\$0.2M	\$7,125M
Total for all Business Uses (1 – 27)		\$1.2B	\$13B

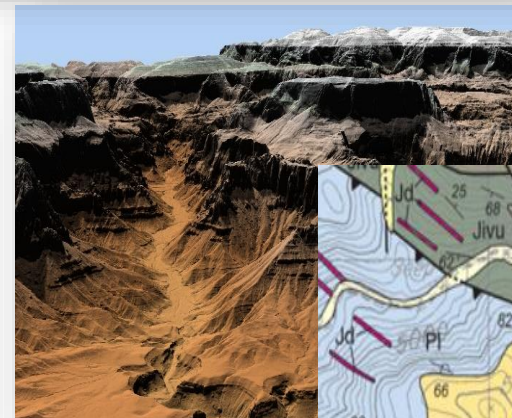
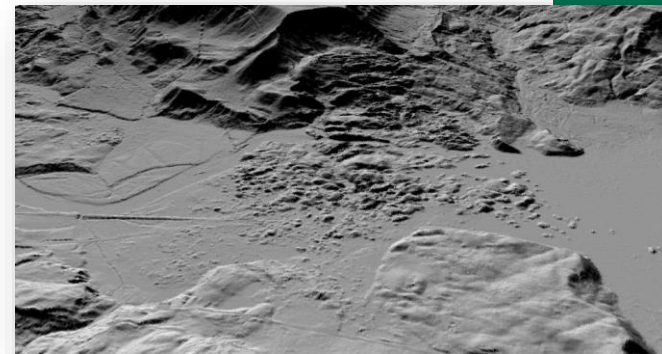
+ 3DEP Applications



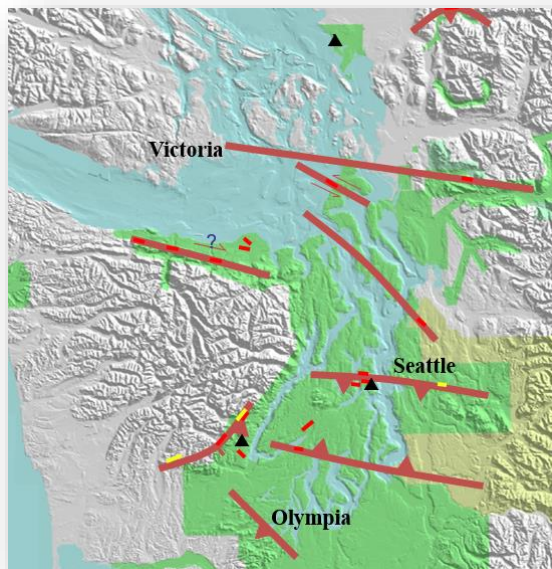
Infrastructure



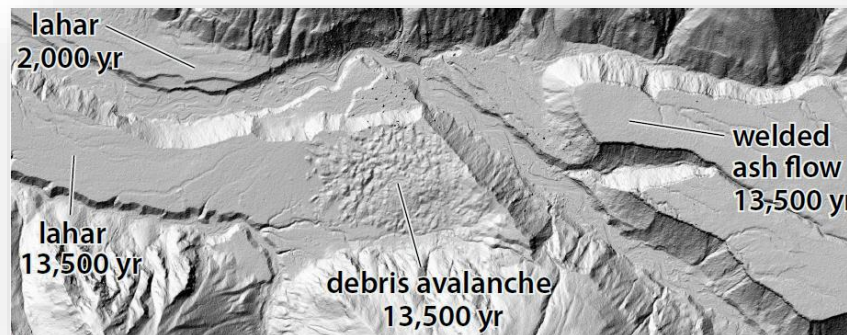
Geologic Mapping



Critical Minerals



Seismic Hazards



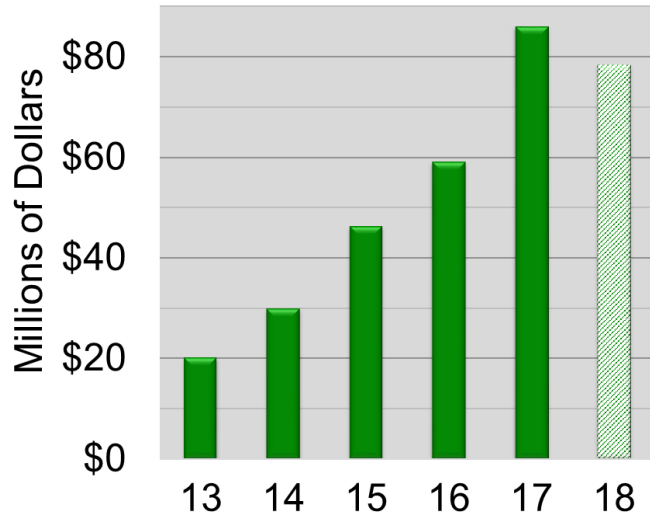
Volcano Hazards



3DEP Status Including FY18 Partnerships to Date

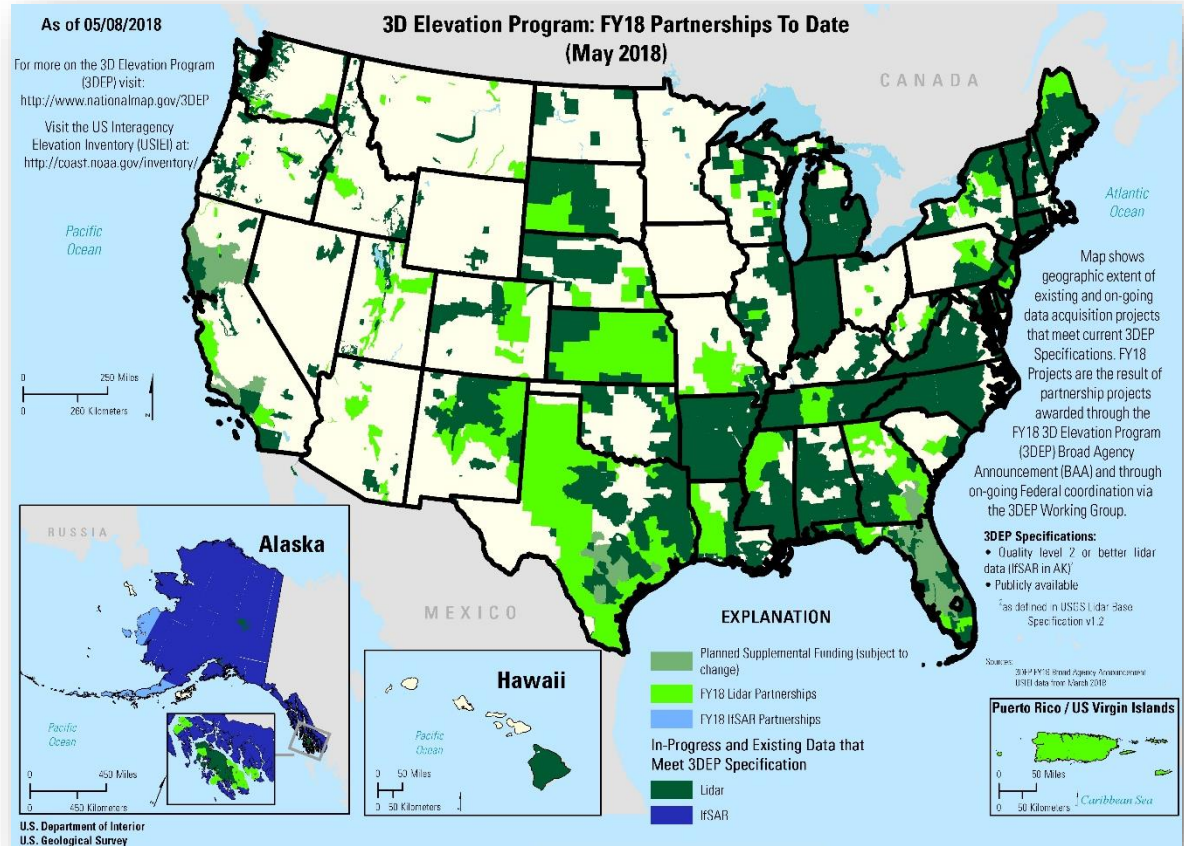
Data are available or in progress for 48% of the Nation

*includes lidar and AK IfSAR



Data acquisition investments by all partners, by fiscal year

FY18 shows investments to date and is not complete



+

FY19 President's Budget

(dollar amounts in thousands)	2017 Actual	2018 CR	2019 Request	Change
National Geospatial Program	67,354	66,897	50,878	-16,019

+ 3DEP Partnerships

How to get engaged – Data acquisition

- Broad Agency Announcement (BAA)
 - Open, transparent, competitive process for partnership funding for 3DEP projects
 - FY15 – FY18 a total of 119 proposals funded
 - Continued growth in partners – in FY18 over 95 different federal, state, regional, local, private and non-profit participants
- Timeline
 - Target to get BAA announced in August, with proposals due in October
- For assistance, contact your National Map Liaison

+ 3DEP Partnerships

How to get engaged – 3D Nation Elevation Requirements and Benefits Study

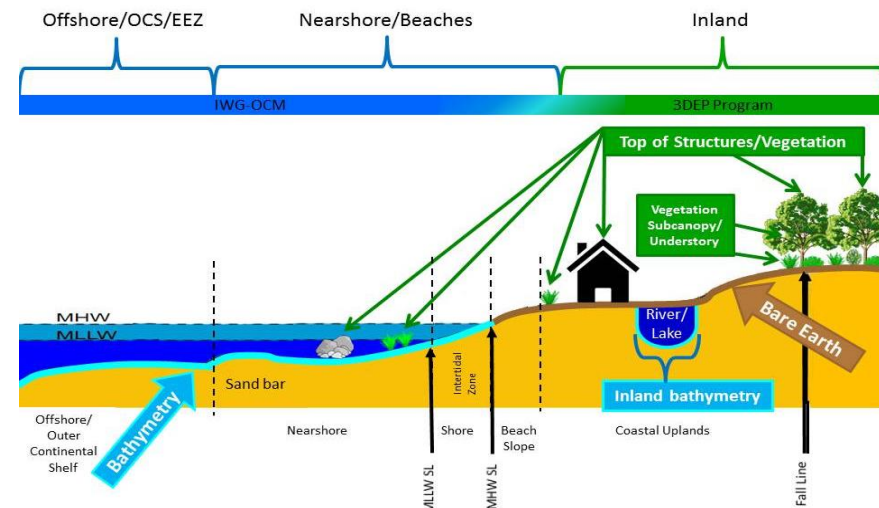


■ Study Goals

- Understand inland, nearshore and offshore bathymetric data requirements and benefits
- Understand how requirements and benefits dovetail in the nearshore coastal zone
- Plan for the next round of 3DEP after completion of nationwide coverage
- Gather technology-agnostic user information to be able to assess new technologies against requirements and identify the tradeoffs between different approaches
- Improve our understanding of needs to guide development of the next generation of 3DEP

■ AASG input is critical to defining the next generation of 3DEP

- 7 State Geological Surveys are serving as State Champions
- 37 of 49 State Geological Surveys will be participants in the study
- This high level of involvement will enable us to understand the geological requirements across the country



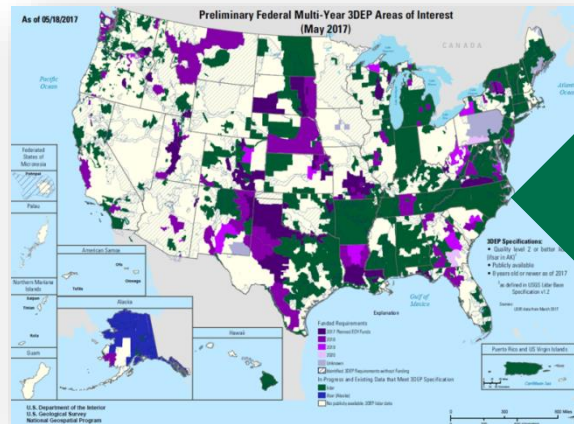
+ 3DEP Partnerships

How to get engaged – State 3DEP plans

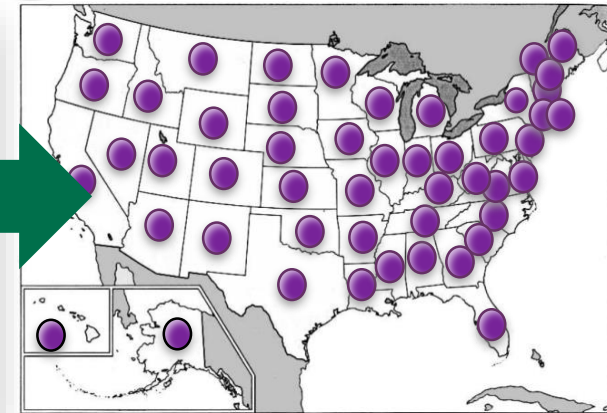
- Advancing towards a unified, national multi-year plan
 - Facilitate greater investments and leveraging through longer planning lead times
 - Allows for improved reporting and justification of investments
 - Presents a plan for nationwide coverage

- 3DEP State Plans are a key ingredient to multi-year planning
 - NSGIC project with AASG input – Mark Yancucci of IL GS is project co-chair
 - Get involved in developing your state's plan!

Federal Multi-Year Plan



3DEP Multi-Year State Plans



+ 3DEP Products

■ Standard DEMs

■ Nationally Seamless

- 2 Arc Second (60m)
- 1 Arc Second (30m)
- 1/3 Arc Second (10m)

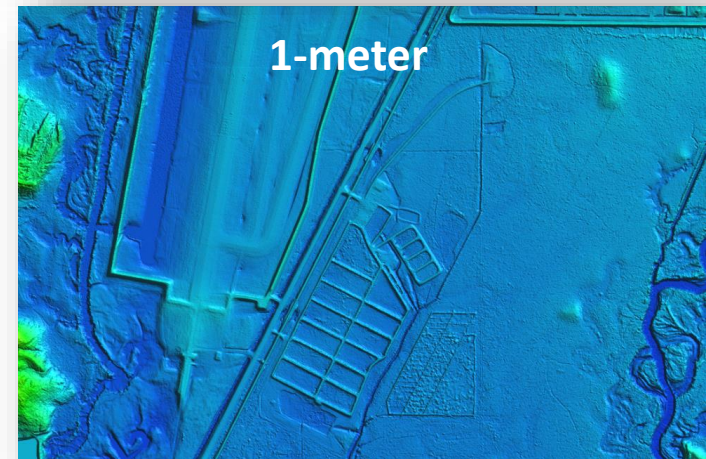
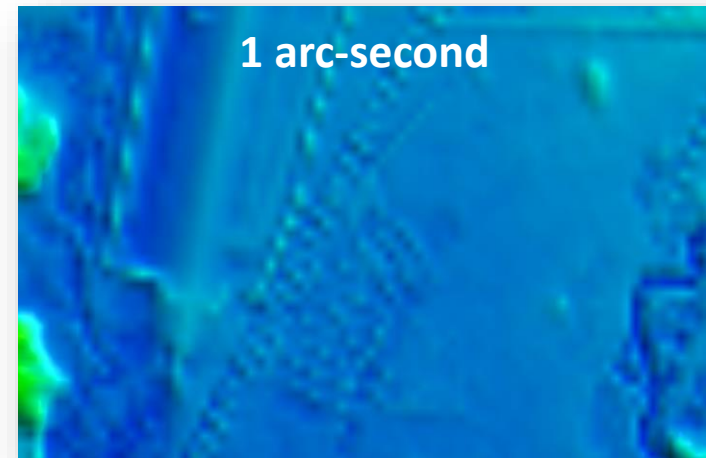
} Previously referred to as
the National Elevation
Dataset (NED)

■ Project-based (seamless within projects)

- 1/9 Arc Second (legacy) (3m)
- 1-meter
- 5-meter (IfSAR - Alaska)

■ Source Data

- Lidar Point Clouds
- Source DEMs (original product resolution)
- Digital Surface Model (IfSAR - Alaska)
- Orthorectified Radar Intensity Imagery (IfSAR - Alaska)



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Datasets

Advanced Search Options Find Products

Elevation Products (3DEP)

Product Search Filter

- All Subcategories
 - 1 arc-second DEM Show Availability
 - 1 meter DEM Hide Availability
 - 1/3 arc-second DEM Show Availability
 - 1/9 arc-second DEM Show Availability
 - 2 arc-second DEM - Alaska Show Availability
 - 5 meter DEM (Alaska only) Show Availability
 - Contours (1:24,000-scale) Show Preview

Data Extent: 10000 x 10000 meter
File Format: IMG

Show All Availability

Availability legend

- 1 arc-second
- 1 meter
- 1/3 arc-second
- 1/9 arc-second
- 1/9 arc-second Coastal Zone
- 2 arc-second
- 5 meter (Alaska only)

Use Map Box/Point Current Extent Coordinates Located Point Polygon:

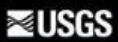
Map Indices 1 Degree 15 Minute 7.5 Minute All

Address/Place Search location. Go Clear

Lat/Lng 47.3984, -88.9387

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DEM Source (OPR)

[Show Availability](#)

Ifsar Digital Surface Model (DSM)

[Show Availability](#)

Ifsar Orthorectified Radar Image (ORI)

[Show Availability](#)

Lidar Point Cloud (LPC)

[Show Availability](#)

Data Extent

Varies

File Format

LAS/LAZ

[Hide All Availability](#)

[Availability Legend](#)

■ DEM Source (OPR)

■ Ifsar DSM (Alaska only)

■ Ifsar ORI (Alaska only)

■ LPC - 0.700001 - 50.000000

■ LPC - 0.350001 - 0.700000

■ LPC - 0.000001 - 0.350000

■ LPC - 0.000000

Hydrography (NHDPlus HR, NHD, WBD)

Imagery - NAIP Plus (1 meter to 1 foot)



Description

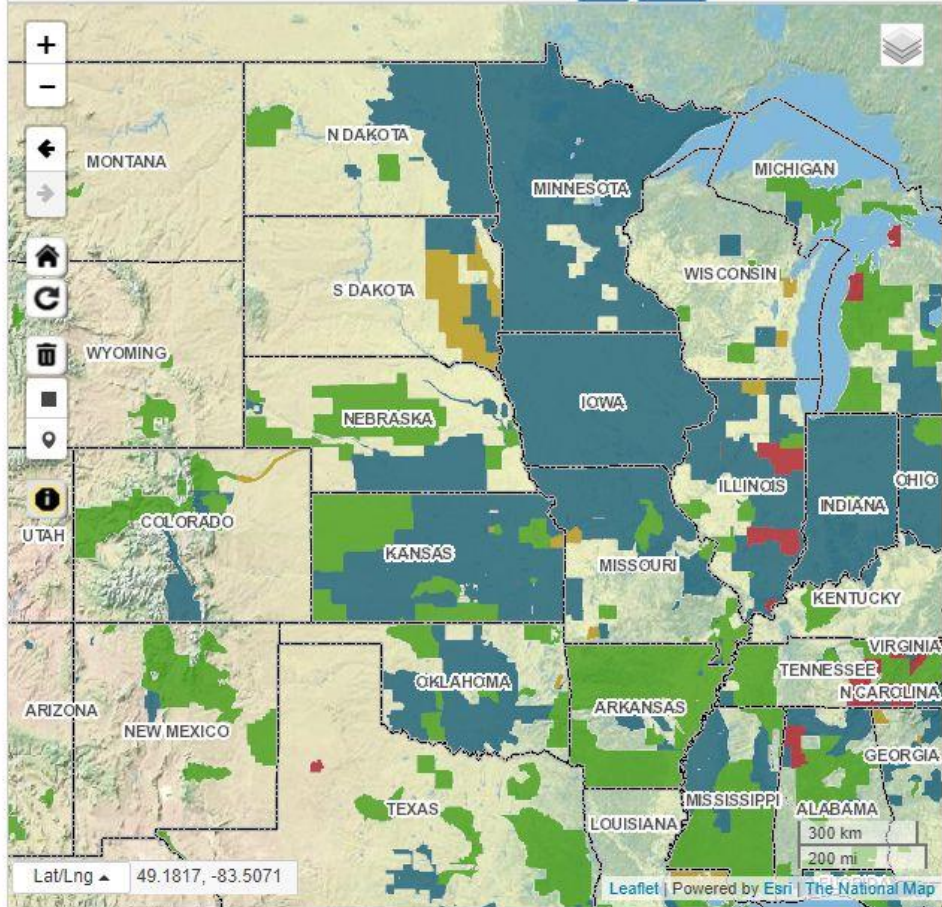
Use Map Box/Point Current Extent Coordinates Located Point Polygon:

Map Indices 1 Degree 15 Minute 7.5 Minute All

Address/Place Search location.

Go

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Lat/Lng 49.1817, -83.5071

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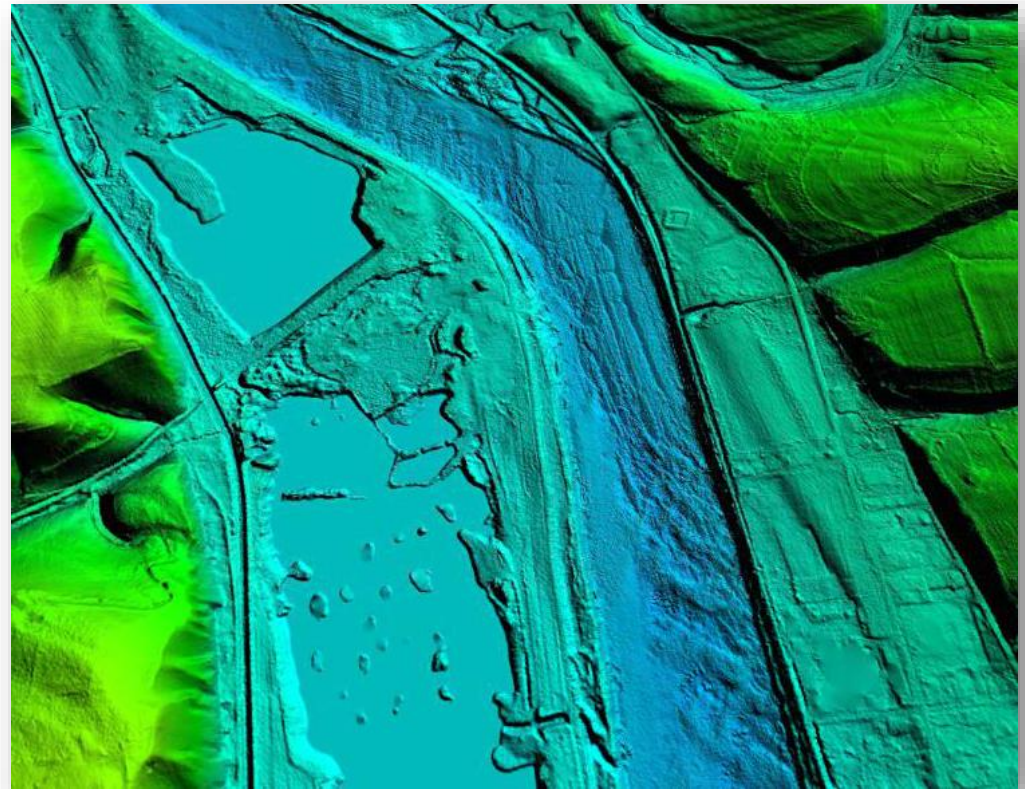
Your Source for Topographic Information

+ Emerging Technology



13

- Geiger mode and single photon lidar test
 - Potential to increase quality and/or bring down costs
 - Pilots in NC, SD, IL and HI
- Inland bathymetry
 - Technology proven in coastal areas
 - EAARL-B topobathy lidar survey of Delaware River was promising
 - Commercial sensors are available through GPSC
 - Began assessments of commercial capabilities in FY17

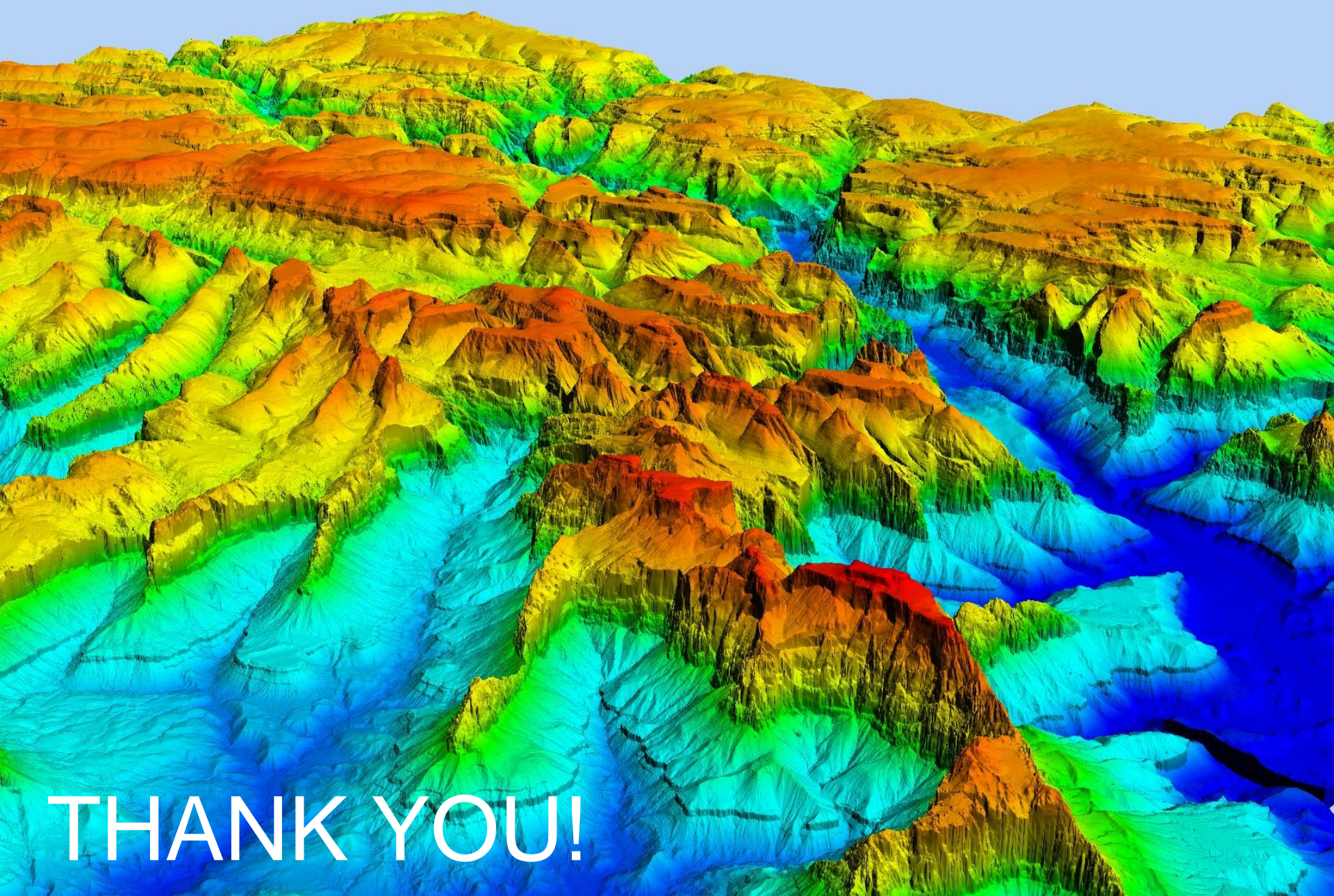


Frenchtown Subregion of the Delaware River, integrated EAARL-B and topographic lidar

+ Inland Topo-Bathy Lidar

- Commercial sensors are now in use for mapping both coastal and inland bathymetry
- Collections will help inform future specifications and topo-bathy lidar collection criteria
- 3DEP pilot project to assess commercial capabilities in FY17: study area is the Kootenai River in Idaho; survey conducted in Sept. 2017
- USGS scientists collected field data during lidar survey for assessing instrument performance and data quality
- Bathymetry lidar also recently collected through the GPSC on Elwha River in WA and in FL Everglades





THANK YOU!



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Zion National Park, UT
3D Elevation Program (3DEP)